

REMARKS

Claims 1, 6, 8, 11–14, and 16–34 are pending in the present application. Claims 31–34 are canceled, Claim 1 has been amended, and no claims have been added, leaving Claims 1, 6, 8, 11–14, and 16–30 for consideration upon entry of the Amendment.

Amended Claims

Claim 1 has been amended to remove “acetonyl acetate”, the inclusion of which term was inadvertent typographical error, and to correctly recite “acetyl acetate”, support for which can be found in Claim 25, and in the Specification in the Examples (e.g., acetyl acetate in Example 1 on page 30, line 5). Claim 1 has further been amended to remove the clause “containing at least one of O, N, P, S, Si, and B”, inclusion of which is not necessary to describe the group of polar groups provided.

No new matter has been introduced by these amendments. Reconsideration and allowance of the claims is respectfully requested based upon the above amendments and the following remarks.

Claim Rejections under 35 U.S.C. §102(b)

Claims 1, 6, 8, 11–14, and 16–34 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 6,455,650 (“Lipian”). Applicants respectfully traverse this rejection.

Lipian discloses a method of making cycloolefin polymer with a cationic Group 10 metal (M) complex and a weakly coordinating anion (WCA) having the formula $[(R')_z M(L')_x (L'')_y]_b [WCA]_d$, in which L' is a Group 15 neutral electron donor ligand, L'' is a labile neutral electron donor ligand, the sum of x , y , and z is 4, and b and d are integers. Abstract.

To anticipate a claim under 35 U.S.C. §102, a reference must disclose each and every element of the claim. *Lewmar Marine Inc. v. Barient, Inc.*, 827 F.2d 744, 747, 3 U.S.P.Q.2d 1766, 1768 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 1007 (1988).

As maintained by Applicants, Lipian fails to disclose the polymer yield for the polymer provided by the above combination of monomer and precatalyst, and further fails to disclose any expected yields for any combinations of norbornene monomer and

catalyst outside of the Examples.

Regarding the Examiner's statement that "it would not be difficult for one of ordinary skill in [the] art to recognize that the process of Lipian is capable of a product yield of greater than 50 [% by weight] or more", Applicants respectfully assert that Lipian fails to provide any disclosure or teaching that clearly show the missing element that the method disclosed therein is capable of providing a polymer from norbornene monomers having polar groups as defined in amended Claim 1, with a yield of 50% or greater. For a rejection under 35 U.S.C. § 102(b) to be proper, a missing element may not be supplied by the knowledge of one skilled in the art or the disclosure of another reference. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 780, 227 U.S.P.Q. 773, 777 (Fed. Cir. 1985). Lipian discloses, in Example 134, the polymerization of a norbornene ester using an *allyl* palladium complex for a polymer yield of 5%. Col. 73, lines 14-23. Lipian, however, fails to disclose a yield of greater than 50% when polymerizing a norbornene-based compound containing a polar functional group, and fails to teach using the catalyst mixture as claimed in instant Claim 1, or the use of a catalyst prepared from the catalyst mixture used to polymerize the claimed norbornene-based compounds containing polar groups as claimed in Claim 1. Thus, Lipian fails to disclose or teach all elements of the claimed method.

Further, the Examiner states in the Office Action that there are working examples of Lipian et al. (col. 49-74, examples 23-25, 28-31, 34, 37, 39, 42, 44-47, 51, 53, 58-76, 84, 88, 89, 95, 98, 102, 105, 110-112, 115-117, 123-125, 129, 132, and 139) disclosing the processes characterized with a product yield of greater than 50 wt% based on the total weight of the monomer and some of the working examples uses a norbonene comonomer having a triethoxysilyl group as a polar functional group. Summaries of these examples are reproduced in Table 1, below for convenient reference, and are listed according to the example number (individually or as grouped), the catalyst, and the monomer set, as disclosed in Lipian.

Table 1.

Examples of Lipian	Catalyst	monomers
23-25, 28, 29, 37, 42, 51, 58, 84, 88, 89, 95, 98, 102, 105	(allyl)palladium chloride dimer	butylnorbornene + 5- <u>triethoxysilyl</u> norbornene
30, 31	(allyl)palladium trifluoroacetate dimer	butylnorbornene + 5- <u>triethoxysilyl</u> norbornene
34	(allyl)palladium (tricyclohexylphosphine) chloride	butylnorbornene + 5- <u>triethoxysilyl</u> norbornene
39, 59	{2-[dimethylamino]methyl}phenyl-C,N- }palladium (tricyclohexylphosphine) chloride	butylnorbornene + 5- <u>triethoxysilyl</u> norbornene
44-47, 60-62, 66-76	(allyl)palladium (tricyclohexylphosphine) triflate	butylnorbornene + 5- <u>triethoxysilyl</u> norbornene
53, 63	trans-di-(μ-aceto)-bis[o-(di-o-tolylphosphino)benzyl]dipalladium	butylnorbornene + 5- <u>triethoxysilyl</u> norbornene
64, 65	bis(tricyclohexyl-phosphine)palladium hydridechloride	butylnorbornene + 5- <u>triethoxysilyl</u> norbornene
110-112,	(allyl)palladium (tricyclohexylphosphine) (methyl)	butylnorbornene + 5- <u>triethoxysilyl</u> norbornene
115	(allyl)palladium (tricyclohexylphosphine) triflate	ethylnorbornene
116	(methallyl)nickel(tricyclohexylphosphine) triflate	norbornene
117	(allyl)palladium (tricyclohexylphosphine) triflate	butylnorbornene + ethyl ester of 5-carboxylic acid of norbornene
123-125	(allyl)palladium (tricyclohexylphosphine) triflate	hexylnorbornene+ 5- <u>triethoxysilyl</u> norbornene
129	(allyl)palladium (tricyclohexylphosphine)(trifluoroacetate)	hexylnorbornene+ 5- <u>triethoxysilyl</u> norbornene
132	(allyl)palladium dimer	butylnorbornene
139	(allyl)palladium chloride dimer	butylnorbornene

As summarized in Table 1, provided herein to clarify the disclosure of Lipian regarding the examples thereof cited by the Examiner, even though the working examples of Lipian et al. disclose norbornene polymers having a product yield of greater than 50 wt%, the working examples did not use a catalyst containing acetylacetonate or acetate ligand. Furthermore, the working examples of Lipian et al. use a monomer having either a triethoxysilyl group or alkylnorbornene. Neither the monomer of the present invention represented by Chemical Formula 5 claimed in instant Claim 1 claims a silyl group. Or, in the instance of Example 117 which discloses a copolymer of norbornene ester copolymerized with butylnorbornene, an allylpalladium catalyst was used. Allyl palladium complexes are not claimed in amended Claim 1, and thus, the examples cited above do not disclose a yield of 50% or greater for the polymerization of a polar norbornene using Lipian, however, fails to disclose a yield of greater than 50% when polymerizing a norbornene-based compound

containing a polar functional group, and fails to teach using the catalyst mixture as claimed in instant Claim 1, or the use of a catalyst prepared from the catalyst mixture used to polymerize the claimed norbornene-based compounds containing polar groups as claimed in Claim 1. Thus, Lipian fails to disclose or teach all elements of the claimed method. Further, the two examples of Example 117 and 134 teach that increasing amounts of the norbornene compound having polar groups provides a reduced yield (5% in the case of 100% norbornene carboxylic acid ethyl ester in Example 134), and thus would provide no expectation that any of the disclosed catalysts would provide the desired cycloolefin polymer in a yield of 50% or more. Thus, not only does Lipian fail to anticipate the instant claims, were the Examiner to reject Claims 1, 6, 8, 11-14, and 16-34 as obvious over Lipian, which the Examiner has not done so explicitly, Applicants would respectfully point out that there is neither a teaching nor motivation to modify Lipian to remedy the deficiencies of Lipian, nor is there an expectation of success, based on the combined teachings of Examples 117 and 134 of Lipian.

Further, in order to anticipate, a piece of prior art must clearly and unequivocally disclose the claimed composition or direct those skilled in the art to the composition without any need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference. *In re Arkley*, 59 CCPA 804, 455 F.2d 586, *Air Products & Chemicals, Inc. v. Chas. S. Tanner Co.* 219 USPQ 223, *Perricone v. Medicis Pharmaceutical Corp.* 267 F.Supp.2d 229. Applicants respectfully assert that Lipian does not direct one skilled in the art to choose either the embodiment wherein the catalyst components are prereacted to form a complex, or reacted in situ to form a complex (both as disclosed in Lipian); or where the catalyst components are mixed to form a catalyst mixture as disclosed in the instant Specification and claimed in Claim 1, arguments in support of which were entered previously and are of record in the Response to Office Action filed August 22, 2006. Lipian does not direct one skilled in the art to choose palladium complexed as bis-acetylacetonate palladium, Pd(acetate)₂, or Pd(acetylacetonate)(acetate), from among the 28 different metal salt and the 42 different metal-ligand combinations disclosed in Lipian in Col. 21, lines 3-35 and in Col. 19, lines 1-44; nor does Lipian direct one skilled in the art to choose tricyclohexylphosphine from among the hundreds of

different examples of potential first cocatalysts disclosed in Lipian in Cols. 9-13; nor does Lipian direct one of ordinary skill in the art to select tetrakis(aluminum)perfluorophenylborate from among the approximately 260 kinds of ionic cocatalysts disclosed in Lipian in Cols. 26-29.

Thus, while Lipian may be reasonably held to direct one of skill in the art to combine one or more of the discussed elements to provide a catalyst for use with a norbornene monomer in general, and specifically a norbornene substituted with an alkyl group, silyl group, or in the instances referred to above (Examples 117 and 134) an ester group, Lipian does not provide adequate direction to pick and choose the specifically selected elements from among the extensive and myriad number of possibilities as disclosed therein and as argued above, to define a method and select catalyst useful for providing a polycycloolefin in a yield of greater than 50%, as is instantly claimed in Claim 1 and its dependents. Lipian, for all of its extensive disclosure, fails to teach a method using the catalyst mixture claimed in Claim 1 that provides a yield of greater than 50% for the claimed polar cyclic olefin monomers of instant Claim 1, and thus fails to teach or disclose a method that includes the specific combination of all necessary elements of the monomer, the isomeric composition of the monomer, the precatalyst, and the cocatalysts *in the specifically claimed combination* to provide the catalyst mixture that can in turn provide a polymer yield of greater than 50%, as claimed in Claim 1. Lipian thus fails to disclose all elements of the instant claims, and fails to teach the invention in a way that would anticipate the instant claims, and therefore fails to anticipate the instant claims.

For these reasons at least, Lipian does not teach all elements of the claimed invention and cannot anticipate the present invention, nor would Lipian make unpatentable the above invention were the Examiner to explicitly reject the pending claims as obvious over Lipian. Applicants therefore respectfully request withdrawal of the rejection and allowance of the claims.

Claim Rejections Under 35 U.S.C. § 102(b)/103(a)

Claims 20–24 have been rejected under 35 U.S.C. 102(b) as allegedly being anticipated by, or in the alternative under 35 U.S.C. § 103 (a) as obvious over Lipian. Applicants respectfully traverse this rejection.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

Claims 20–24 depend from Claim 1. As argued hereinabove, Lipian fails to teach all elements of the claimed invention. Specifically, Lipian does not disclose or teach a catalyst mixture, nor does Lipian disclose the method in its entirety of the catalyst mixture as applied to the polymerization of a norbornene monomer having polar groups, all as claimed in instant Claim 1. Further, Lipian fails to disclose or teach polymeric yields of greater than 50% when a monomer solution comprising a norbornene-based compound containing a polar functional group is converted in the presence of the catalyst mixture comprising a precatalyst containing a Group 10 transition metal having a ligand containing oxygen ions bonded to the metal. Thus, Lipian fails to teach or disclose all elements of the instant claims and does not teach or suggest modifying the disclosure of Lipian by using the catalyst mixture as claimed in the instant claims, or by selecting from among the myriad number of choices of catalyst components to prepare a catalyst composition that might provide the desired cycloolefin polymer from norbornene monomer having polar groups as argued above. Further, even assuming that all elements of an invention are disclosed in the prior art, an Examiner cannot establish obviousness by locating references that describe various aspects of a patent applicant's invention without also providing evidence of the motivating force which would have impelled one skilled in the art to do what the patent applicant has done. *Ex parte Levengood*, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. Int. 1993). The references, when viewed by themselves and not in retrospect, must suggest the invention. *In Re Skoll*, 187 U.S.P.Q. 481 (C.C.P.A. 1975). Lipian fails to provide a reason for one of ordinary skill in the art to modify in the manner required to meet

Claim 1 and its dependents 20-24. *In re Laskowski*, 871 F.2d 115, 117, 10 U.S.P.Q.2d 1397, 1398 (Fed. Cir. 1989) (“Although the Commissioner suggests that [the structure in the primary art reference] could readily be modified to form the [claimed] structure, ‘[t]he mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification’”) (citation omitted). Therefore, Lipian fails to either anticipate Claims 20-24 or make these claims unpatentable.

In addition, regarding instant Claim 29, Lipian is silent as to the isomeric ratio of exo to endo for the norbornene monomers having the polar group, which is more than 50 mol% exo as claimed in Claim 29. One skilled in the art will readily appreciate that polymerization product in high yield (i.e., greater than 50%) would not be expected to have the same properties as a polymer prepared using a different isomeric ratio; nor would the composition of a resulting polymer with a monomer enriched in the atypical isomer (here, the exo- isomer) be expected to have the same properties as one prepared using a different isomeric ratio. Lipian fails to provide a reason for one of ordinary skill in the art to modify Lipian in the manner required to meet Claim 29 regarding the isomeric ratio. *In re Laskowski*, 871 F.2d 115, 117, 10 U.S.P.Q.2d 1397, 1398 (Fed. Cir. 1989) (“Although the Commissioner suggests that [the structure in the primary art reference] could readily be modified to form the [claimed] structure, ‘[t]he mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification’”) (citation omitted); *In re Stencel*, 828 F.2d 751, 755, 4 U.S.P.Q.2d 1071, 1073 (Fed. Cir. 1987) (obviousness cannot be established “by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion that the combination be made”). Lipian fails to disclose the polymer yield for the above combination of predominantly exo monomer, precatalyst, and co-catalysts. There is no teaching or suggestions to combine elements of the prior art to produce the present invention. The present invention is thus nonobvious.

Lipian thus fails to disclose or teach a method including all the elements explicitly taught in the instant claims of the monomer, the precatalyst, and the cocatalysts in the specific, useful mixture claimed for providing the yield of greater than 50%, and an optical anisotropic film comprising a cycloolefin polymer prepared using

the method as claimed in the instant claims, and thus does not make the claims unpatentable. Reconsideration and allowance of the claims is respectfully requested.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and withdrawal of the rejections and allowance of the case are respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,
CANTOR COLBURN LLP

By: /Dana A. Gronbeck/
Dana A. Gronbeck
Registration No. 55,226
Confirmation No. 5544
Cantor Colburn LLP
55 Griffin Road South
Bloomfield, CT 06002
Telephone: (860) 286-2929
Fax: (860) 286-0115
PTO Customer No. 23413

Date: January 22, 2007